



**NPDES Permit Program Instructions
for the
Discharge Monitoring Report Forms (DMRs)
Report Year 2003**

DMR Instruction Package 2003

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THIS ENTIRE INSTRUCTION BOOKLET IS AVAILABLE ON-LINE AT
WWW.EPA.GOV/REGION01/COMPLIANCE/ENFDMR.HTML

[REVISED April 2003]

DMR INSTRUCTION PACKAGE REVISIONS

This page lists any monitoring and reporting procedure and/or requirement that had major changes that may supersede your existing permit. All address changes enclosed supersede the submittal to MA DEP or NH DES or US EPA addresses otherwise written in your NPDES permit.

PLEASE NOTE the following chapter, page, and section have had minor changes from the 2002 Instructions:

Chapter 1 - Introduction

(page 2) Compliance Sludge contact deleted

*Chapter 1, 13. a. (page 6) Added Except the QA/QC which goes directly to:
US EPA - New England Regional Laboratory
11 Technology Drive
Chelmsford, MA 01863-2431*

Chapter 1, 13. b. (page 6)

NH DES name change: Wastewater Engineering Bureau

*Chapter 1, 13. c. (page 7) MA DEP deleted the word 'assurance' and now reads
'...annual compliance fees, call ...'*

NEW as of April 2003:

The NERO of MADEP in Wilmington will close. They are relocating to Boston. The new address is given below. Please begin including this address for report submittals for permittees in the Northeast Region.

MA Department of Environmental Protection - Northeast Regional Office
Bureau of Resource Protection (*for POTWs*)
Bureau of Waste Prevention (*for industrial discharges*)
1 Winter Street, Boston, MA 02108

Chapter 2 (page 2) New bullet added:

How and where do I report an error on the DMR?

To correct an error in reporting data on the DMR, or you need to make a change due to an error in reporting, cross out the value(s), reenter and initial the field/box. Any errors in reporting need to be noted, either on the bottom of the DMR or in a cover letter.

Change made to the last bullet: All reference to ME DEP has been deleted.

Chapter 3, 3. FLOW (page 3, 4)

NEW PERMIT FLOW LANGUAGE for Massachusetts municipal and privately owned sanitary wastewater facilities (e.g. condominiums, nursing homes) with permits issued since 2001:

If your flow is an annual average limit, report maximum and minimum daily rates and total flow for each operating date. This is an annual average limit, which shall be reported as a rolling average. The first value will be calculated using the monthly average flow for the first full month ending after the effective date of the permit and the eleven previous monthly average flows. Each subsequent month's DMR will report the annual average flow that is calculated from that month and the previous 11 months.

CHAPTER 1. Introduction

INSTRUCTIONS FOR COMPLETING US EPA'S PRE-PRINTED NPDES DISCHARGE MONITORING REPORT (DMR) FORM 3320-1

Each month's form should be carefully reviewed to insure entirety of seasonal requirements and specific sampling that might be required less than monthly, i.e. quarterly requirements. After reviewing these DMRs for completeness be sure to read these directions to be certain you understand your reporting obligations.

If your pre-prints include two sets of monitoring requirements to cover different production schemes or climatic considerations for the same discharge point please submit all forms monthly for that discharge point. You should report quantitative data on the appropriate form and merely indicate "NO DATA" on the forms that do not apply for that month. You can do this by using the code "NODI" along with one of the alpha or numeric codes shown on ATTACHMENT E appended to the "Example DMR Calculations".

If **toxicity limits are contained in your permit please assure the appropriate data is included on your DMR as well as submitting a copy of the entire laboratory report including chain of custody information to the P.O. Box address listed in this document.** Review the 'Toxicity Test Summary Sheet' and 'NPDES Whole Effluent Toxicity Testing, Monitoring and Reporting Tips, Common Pitfalls and Guidance' are included as **ATTACHMENT F and G.** Although submittal of **ATTACHMENT F** is not mandatory, we encourage you to use it to ensure that your laboratory utilizes this sheet and that you forward it along with your toxicity report. Utilization of this summary sheet will accelerate the process of reviewing toxicity test reports. However, this sheet is not to be used as a substitute for the actual laboratory report or the DMR.

If sludge limits are contained in your permit please assure the appropriate data is included on your DMR (SL1A - **ATTACHMENT B-4**) as well as submitting a copy of the entire laboratory report including chain of custody information to the P.O. Box address.

Whenever you have an opening in the sample measurement row, whether it be for quantity or concentration, test results must be supplied. If information is not required "*****" is printed on the DMR in the permit requirement row as well as in the corresponding measurement row. You must supply the units of measure; the number of exceedances of your permit limit; the frequency with which you've conducted your analyses and the sample type. Please note that even though the permit requirement row indicates some of this information you must verify in the sample measurement row that your testing is being performed in accordance with your permit or enforcement action requirements. If you do additional testing, you need to report it.

You should ignore the column headers of average and maximum on the quantity side and minimum, average and maximum on the concentration side and refer to the reporting requirement

contained in the permit requirement row for each individual parameter. For example if your permit requires you to report a monthly average, weekly average, and maximum day value do not report a minimum value.

CONTACTS

You may contact the **US EPA** staff listed in your annual letter, or below -

Questions concerning reapplication of a current permit or an application for a new permit:

Massachusetts - Olga Vergara, 617.918.1519
New Hampshire - Shelley Puleo, 617.918.1545

Questions concerning a new permit or an existing permit, and/or modifying an existing permit, contact your Permit Writer as noted in the Fact Sheet issued with your Draft Permit. If you do not know who that may be, you may telephone the following:

617.918.1570, MA Permit Unit
617.918.1580, NH Permit Unit

and you will be directed to the appropriate permit writer.

Other NPDES permit related and/or compliance questions should be directed to the following --

General Permits: Suproakash Sarkar, 617.918.1693

Sludge: permit, Thelma Murphy, 617.918.1615

Whole Effluent Toxicity:
test methods, David McDonald, 617.918.8609
compliance, Joy Hilton, 617.918.1877

Stormwater: permit, Thelma Murphy, 617.918.1615
compliance, Steve Couto, 617.918.1765

Bypasses, CSO, DWO: 24 hour telephone report to compliance at
telephone, 617.918.1715

Pretreatment Program: permit, Jay Pimpare, 617.918.1531
compliance, Joe Canzano, 617.918.1763

Questions regarding the QC/QA and US EPA Testing Methods and procedures: contact the US EPA Laboratory in Chelmsford, MA at, 617.918.8300, or, 978.937.8500.

You may contact any **US EPA** employee via E-mail using the following format: last name.first name@epa.gov

For your information and viewing, you may visit the **US EPA's** WEB SITE at www.epa.gov/ or www.epa.gov/enviro or www.epa.gov/region01/ to view any of the EPA programs.

DMR PREPRINTED FORM

1. Permittee Name/Address

Ensure that the correct name and mailing address appears in the top left corner of the form, and the location is correct. If incorrect, submit a letter with the correct information to the address provided in Chapter 1, Page 6.

2. Permit Number

Ensure that the pre-printed NPDES Number conforms with the NPDES Number for which you are reporting sample measurement information. REMINDER: **All letters and reports** need the NPDES Number prominently displayed. Submittals for each NPDES permitted facility require a separate cover letter, if one is provided.

3. Discharge Number

A separate DMR form has been **pre-printed for each monitoring period** for each pipe discharge. Check the pre-printed Discharge Number with the Discharge Number for which you are reporting measurement information. A narrative description of the discharge should also appear in the top right corner of the DMR.

4. Monitoring Period

DMR's are normally pre-printed for an entire year. Therefore it is important to check the pre-printed Discharge Number and Monitoring Period against those for which you are reporting measurement information. Example: 001A, 001T, 002A, SL1A.

5. Parameter

Each parameter contained in your NPDES permit is listed in the far left column of the DMR. Seasonal parameters and pipe discharges are only included on the DMRs for the monitoring periods stipulated in your NPDES permit. Parameters or entire discharge pipes that must be reported less frequently than monthly (i.e. quarterly, semi-annually, etc.) will be included in the DMR's for the last month of the reporting period specified in your NPDES permit. However, sampling for these parameters may be performed any time during the reporting period.

An exception to the above that you may notice in your permit is for either quarterly or semi-annual testing for toxicity. You may have a requirement to test in one month, or a specific day and week, and not be required to submit test results until a later month. For example you could have a quarterly testing requirement of January, April, July and October with submittal required in the months of March, June, September and December. The requirement would be printed on a separate DMR showing a report period in the case of July testing as 98/07/01 to 98/08/31. The PCS system would then expect to see this report submitted within 15 days following the monitoring period end date i.e., for the example above, the report would be due by 98/09/15. Subsequent quarters would be handled the same way in the system. See **ATTACHMENT B** to "Example DMR Calculations" for Discharge Number 001T.

Particular attention must also be paid to the monitoring location descriptions for each parameter; multiple monitoring locations may appear for the same parameter on a single DMR form.

6. Permit Requirement Row

The Permit Requirement row lists the NPDES permit effluent limit for each parameter and a description of the statistical basis (i.e. minimum monthly, average monthly, maximum daily, etc.) of the reporting requirement. If the parameter is not limited, but monitoring is required, the DMR lists the words "Report" followed by the statistical basis on which the information must be reported. It is imperative to note that **the description contained in the Permit Requirement row supersedes the "Average" and "Maximum" quantity headers and the "Minimum", "Average" and "Maximum" concentration headers.** The reporting requirements in the permit must be followed (i.e. monthly average, weekly average, maximum day) not the column headings on the DMR form at the top, over the two quantity and the three concentration columns.

If information is not required, then "*****" is printed in the appropriate Permit Requirement blocks as well as corresponding Sample Measurement blocks. In the Permit Requirement row, the Frequency of Analysis, Sample Type, and Units column also reflect the requirements of your NPDES permit. This information must be provided for each parameter to be considered complete.

7. Sample Measurement Row

All blocks within the Sample Measurement row in which "*****" does not appear must be used by you to report the information required in the corresponding Permit Requirement row. The accuracy of the reported sample measurements must be consistent with the accuracy of the approved analytical method. **Do not leave blank spaces on the DMR unless measurement information is not available for a specific pipe/parameter.** If any blanks appear on your DMR, an explanation must be attached to the DMR or shown in the comment field at the bottom of the DMR. EPA's automated violation tracking system will subsequently detect these blanks as non-reporting violations for which you may be subject to enforcement actions.

For those months when no sampling occurs for a specific outfall pipe, write "No DATA" and the NODI code across the DMR, or place the appropriate code in the box in the upper right corner of the DMR. If there is a NODI for a specific parameter, then write NODI and the appropriate code next to or on that line. There is no need to fill in the rest of that row. A copy of the available codes to represent "No Data" is provided in **ATTACHMENT E.**

If all sample analyses for a given parameter were determined to be Below Detectable Limit [BDL], below the minimum level of detection [BMLD], or not detected [ND], a result of 0 (zero) should be reported for that reporting period. In calculating monthly and weekly average values, a 0 (zero) should be substituted for all results below the minimum level of detection. Report the detected value in the comment section of the DMR; or, report it in a cover letter, if one is provided.

NOTE: Codes of 'B', 'BDL', 'ND', and 'TR' are no longer valid in reporting results that are below the minimum level of detection. Reporting of too numerous to count, **TNTC**, is to be reported in the **daily maximum** column. See new language in the **EXAMPLE DMR CALCULATIONS, #5**. TNTC is converted in PCS as "99999". If the lab reports a trace amount, then reporting of trace amount is to be reported on the DMR as **0** (zero).

Other than the list of valid codes listed on **ATTACHMENT E**, the following are the only symbols other than numerals that can be entered on the DMR form to clarify a numeric result. For example, the symbols "<" [less than] and ">" [greater than] can be used to clarify an analytical result; or the symbol "TNTC" or "T" can be used to indicate a coliform test count that is too numerous to count. If a "T" symbol is used, enter in all measurement boxes for this parameter.

8. **No. Ex.** (Number of Exceedances)

Enter the number of actual sample measurements that exceeded the permit requirement(s) (maximum and/or minimum, 7-day average, etc.) for each parameter. The number should be the total of all exceedances measured during the reporting period -- both of loading and concentration limits. If all samples measured are at or below the permit level, enter **0** (zero), unless your permit limit has a minimum requirement.

9. **Frequency of Analysis**

Enter the actual frequency of the sample analysis that occurred during the reporting period in the Sample Measurement row; the minimum frequency is as specified in the corresponding Permit Requirement row. This information must be reported in a compatible format. Therefore, please enter the code that most accurately represents the actual sampling frequency. A copy of the valid codes is provided in **ATTACHMENT C**.

10. **Sample Type**

Enter the actual sample type used during the monitoring period in the Sample Measurement row. Again, the sample type required by your NPDES permit is shown in the corresponding Permit Requirement row. Enter the code that most accurately represents the actual sample type. A copy of the valid codes are provided in **ATTACHMENT D**.

11. **Comments**

Please take note of any pre-printed comments or instructions that appear on the bottom of the DMR form(s). This field should also be used to reference any required explanations of permit violations and should also note the persons or laboratory that performed the analytical work. If there is not enough space available to explain violations you must attach an explanation to the DMR. This can be handled through your transmittal letter.

12. **Signature**

Be sure the name and title of the principal executive officer or his/her authorized agent is provided and that the form is appropriately signed and dated. **AN ORIGINAL DMR FORM AND**

SIGNATURE IS REQUIRED (do not send in the duplicate carbonless DMRs, nor a photocopy of the original). If an authorized agent is signing the DMR, a written authorization must be provided to EPA. Should a duly authorized agent sign and certify the DMR form, a written authorization must be submitted to the Agency in accordance with 40 CFR §122.22(b)(1), (2), and (3). Any change to an authorization must be submitted in writing in accordance with 40 CFR §122.22(c). All certifications must be in accordance with 40 CFR §122.22(d). Following this chapter is a copy of §122.22 [40 CFR Ch.1 (7-1-99 Edition)].

13. **Transmittal**

a. **To the US EPA:**

All reports should be forwarded in time to reach the **US EPA** by the date specified in your permit and should be mailed to the P.O. Box address:

**Water Technical Unit (SEW)
U.S. ENVIRONMENTAL PROTECTION AGENCY
P.O. BOX 8127
BOSTON, MA 02114**

Except the QA/QC which goes directly to:
USEPA - New England Regional Laboratory
11 Technology Drive
Chelmsford, MA 01863-2431

b. **To the NH DES:**

For the State of New Hampshire, submit a copy of your DMR to the:

New Hampshire Department of Environmental Services (NH DES)
Water Division
Wastewater Engineering Bureau
6 Hazen Drive, P.O. Box 95
Concord, NH 03302-0095

c. **To the MA DEP:**

For the State of Massachusetts, submit a copy of your DMR and all other notifications, except toxicity test reports, to your local regional office listed below:

MA DEP Western Regional Office 436 Dwight Street Suite 402 Springfield, MA 01003	MA DEP Central Regional Office 627 Main Street Worcester, MA 01608	MA DEP Northeast Regional Office 205 A Lowell Street Wilmington, MA 01887	MA DEP Southeast Regional Office 20 Riverside Drive Lakeville, MA 02347
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NOTE: MA DEP policy on receiving DMRs: Copies of DMRs are required to be sent to DWM as well as copies of Whole Effluent Toxicity tests and related notices. All are to be sent to:

Massachusetts Department of Environmental Protection (MA DEP)
Division of Watershed Management (DWM)
627 Main Street, 2nd Floor
Worcester, MA 01608

MA DEP contacts: If you are seeking information about DEP permitting, need application forms, or have questions about annual compliance fees, call the MA DEP Regional Service Center:

Western Region (Springfield)	413-784-1100 x214
Central Region (Worcester)	508-792-7683
Northeast Region (Wilmington)	978-661-7677
Southeast Region (Lakeville)	508-946-2714

For general information about MA DEP permitting, call the MA DEP InfoLine:

617-338-2255	(From area code 617 and outside MA)
800-462-0444	(From area codes 413, 508, 781, and 978)

For information on WWTF operator certification and training, or information about residuals management, contact the Millbury Training Center:

WWTF Operator Certification	508-756-2214
Residuals (Sludge) Management	508-752-8648

For information about MA DEP grant and loan programs, call the Division of Municipal Services at 617-292-5793

Permit applications, publications, and compliance information are also available at the MA DEP website:
<http://www.state.ma.us/dep/>

******* This notification supersedes the submittal to your state or the US EPA address(es) otherwise written in your NPDES permit. *******

Signature Requirements

[Code of Federal Regulations]

[Title 40, Volume 14, Parts 87 to 135]

[Revised as of July 1, 1999]

From the U.S. Government Printing Office via GPO Access

[CITE: 40CFR122.22]

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PART 122--EPA ADMINISTERED PERMIT PROGRAMS: THE NATIONAL
POLLUTANT DISCHARGE ELIMINATION SYSTEM--Table of Contents

Subpart B--Permit Application and Special NPDES Program
Requirements

Sec. 122.22 Signatories to permit applications and reports
(applicable to State programs, see Sec. 123.25).

(a) Applications. All permit applications shall be signed as follows:

(1) For a corporation. By a responsible corporate officer. For the purpose of this section, a responsible corporate officer means: (i) A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or (ii) the manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding \$25 million (in second-quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

Note: EPA does not require specific assignments or delegations of authority to responsible corporate officers identified in Sec. 122.22(a)(1)(i). The Agency will presume that these responsible corporate officers have the requisite authority to sign permit applications unless the corporation has notified the Director to the contrary. Corporate procedures governing authority to sign permit applications may provide for assignment or delegation to applicable corporate positions under Sec. 122.22(a)(1)(ii) rather than to specific individuals.

(2) For a partnership or sole proprietorship. By a general partner or the proprietor, respectively; or

(3) For a municipality, State, Federal, or other public agency. By either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes: (i) The chief executive officer of the agency, or (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of EPA).

(b) All reports required by permits, and other information requested by the Director shall be signed by a person described in paragraph (a) of this section, or by a duly authorized representative of that person. A person is a duly authorized representative only if:

(1) The authorization is made in writing by a person described in paragraph (a) of this section;

(2) The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent,

position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company, (A duly authorized representative may thus be either a named individual or any individual occupying a named position.) and,

(3) The written authorization is submitted to the Director.

(c) Changes to authorization. If an authorization under paragraph (b) of this section is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of paragraph (b) of this section must be submitted to the Director prior to or together with any reports, information, or applications to be signed by an authorized representative.

(d) Certification. Any person signing a document under paragraph (a) or (b) of this section shall make the following certification:

I certify under penalty of law that this document and all ATTACHMENTS were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and

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complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

(Clean Water Act (33 U.S.C. 1251 et seq.), Safe Drinking Water Act (42 U.S.C. 300f et seq.), Clean Air Act (42 U.S.C. 7401 et seq.), Resource Conservation and Recovery Act (42 U.S.C. 6901 et seq.))

[48 FR 14153, Apr. 1, 1983, as amended at 48 FR 39619, Sept. 1, 1983; 49 FR 38047, Sept. 29, 1984; 50 FR 6941, Feb. 19, 1985; 55 FR 48063, Nov. 16, 1990]

CHAPTER 2. ANSWERS TO FREQUENTLY ASKED QUESTIONS for DMRs

- ▶ Who do I contact at the US EPA if there are any discrepancies between my NPDES permit and the preprinted DMR Forms?

If there are any discrepancies, or you have questions, between your permit and the DMR form, please call the individual named in the annual transmittal letter or write to:

Water Technical Unit (SEW)
U.S. ENVIRONMENTAL PROTECTION AGENCY
P.O. BOX 8127
BOSTON, MA 02114

NOTE: The permittee is required to sample and report in accordance with the NPDES Permit or enforcement action. Errors or omissions on the preprinted DMR forms do not preclude any reporting requirement you may have.

- ▶ What analytical procedures do I use?

Sampling and analytical procedures must comply with 40 CFR §136. [See EPA's home page on the WEB at www.epa.gov/ and click on LAWS & REGULATIONS, or go directly to www.access.gpo.gov/nara/cfr/index.html. The procedures are basically the same as those in Standard Methods For The Examination of Water And Wastewater. However, not all Standard Methods procedures are approved for EPA use. To ensure that your analytical procedures meet EPA requirements, please check the cited EPA regulations. **In addition, the name of the persons or laboratory performing the analytical work must be provided in any available space in the comments section that appears on the bottom of the form.** If there is no space available on the DMR, include this information in a cover letter.

- ▶ Can any symbols other than numerals be entered on the DMR?

Other than the list of valid codes listed on **ATTACHMENT E**, the following are the only symbols other than numerals that can be entered on the DMR form to clarify a numeric result. For example, the symbols "<" [less than] and ">" [greater than] can be used to clarify an analytical result; or the symbol "TNTC" can be used to indicate a coliform test count that is too numerous to count.

- ▶ If a calendar **week** begins in one month and ends in the next month, which sample measurements do I report on my DMR?

With two exceptions, all sample measurements must be reported on the DMR for the **month** in which the samples were taken. The first exception occurs when a calendar week begins in one month and ends in the next. In this instance, compliance with weekly reporting requirements must be reported for the month in which the calendar week ends. For DMR reporting purposes, a calendar week begins on Sunday and runs through Saturday, inclusive. The second exception, which is unrelated to when a calendar week begins and ends, involves parameters, or entire discharge pipes, that must be reported less frequently than monthly (i.e.

quarterly, semi-annually, or annually) and the permit does not specifically indicate the month to take the sample. Sampling for these parameters or discharge pipes may be performed any time during the reporting period stipulated in your NPDES permit. However, these parameters or discharge pipes need only be reported on the **last monthly DMR of the reporting period**. For example, quarterly reporting requirements can appear on the March, June, September, and December DMR's. However, if the sampling month is designated in the permit for a specific month, the requirement may appear on that month's DMR.

An exception to the above that you may notice in your permit is for either quarterly or semi-annual testing for toxicity. You may have a requirement to test in one month and not be required to submit test results until a later month. For example you could have a quarterly testing requirement of January, April, July and October with submittal required in the months of March, June, September and December. The requirement would be printed in the case of April testing as 99/04/01 to 99/05/31. The PCS system would then expect to see this report submitted within 15 days following the monitoring period end date; i.e., for the example above, the report would be submitted by 06/15/99. Subsequent quarters would be handled the same way in the system. See **ATTACHMENT B**, for Discharge Number 001T, as an example.

- ▶ What results do I report if I sample more frequently than required by my NPDES Permit?

All monitoring requirements of the NPDES permit are minimum requirements. The results of any additional monitoring of parameters at location(s) designated in the NPDES Permit, using approved sampling procedures and analytical methods, must be included in the DMR calculations. Such increases in the frequency of sampling must also be reported in the Frequency of Analysis block. [40 CRF §122.41(1)(4)]

- ▶ How and where do I report an error on the DMR?

To correct an error in reporting data on the DMR, or you need to make a change due to an error in reporting, cross out the value(s), reenter and initial the field/box. Any errors in reporting need to be noted, either on the bottom of the DMR or in a cover letter.

- ▶ How and where do I report a bypass?

Please review the document that came with your permit entitled **Contents - Part II (September 1, 1993)** [latest version]. Especially read Section B. 4. Bypass; and, Section D. 1. e. You will find the attached form useful in fulfilling your reporting responsibility. You may copy it and/or add your official heading to this form. See **ATTACHMENT H: Bypass or Sewer Overflow Report.**

- ▶ To whom do I submit the completed DMR form?

Please complete the DMR in accordance with the attached instructions, have each page of the DMR signed and dated by the principal executive officer or authorized agent and return the signed original DMR to the responsible regulatory agency. The responsible regulatory agency is the US EPA, unless the NPDES permit compliance program has been delegated to a state agency.

You will note that in addition to the original top page, triplicate copies of the DMR have been provided on contact paper. For permittees in the States of **Massachusetts** and **New Hampshire**, one copy of the signed DMR should be retained in your files and another mailed to the State regulatory agency; in MA, a copy must also be sent to DWM. The original DMR should be forwarded to the US EPA.

For the State of MA and NH, all NPDES reporting requirements need to be mailed to the following US EPA mailing address:

Water Technical Unit (SEW)
U.S. ENVIRONMENTAL PROTECTION AGENCY
P.O. BOX 8127
BOSTON, MA 02114

CHAPTER 3. EXAMPLE DMR CALCULATIONS

Sampling information for a typical municipal wastewater treatment plant is provided in **ATTACHMENT A**. The resultant Discharge Monitoring Report (DMR) reflecting this information appears as **ATTACHMENT B**. A sample DMR for Whole Effluent Toxicity monitoring is also included as part of **ATTACHMENT B** (also see **ATTACHMENTS F and G**). This illustrates the footnote that specifies the Permit requirements.

The following is an explanation of the derivation of the numbers that appear on the completed DMR. These examples can be applied to calculating: Monthly Average, Weekly Average, Daily Maximum. For these examples, we have used BOD and TSS.

1. Five-day Biochemical Oxygen Demand (BOD₅) and Total Suspended Solids (TSS)

a. Concentration Block Data Entry

Table 1 in **ATTACHMENT A** lists nine effluent BOD₅ sample results for the month. The reported values are 40.0, 19.1, 6.2, 10.3, 10.2, 12.0, 7.1, 10.1, and 45.6 mg/L. The monthly average concentration 17.8 mg/L was determined by adding these nine values and dividing by the number of samples. The weekly average concentration represents the highest average of daily discharges over a calendar week. For DMR reporting purposes, a calendar week runs from Sunday through Saturday, inclusive. In the specific instance where a calendar week begins in one month and ends in the next, compliance with weekly reporting requirements should be reported on the DMR in which the calendar week ends.

Weekly averages are calculated by taking the sum of all daily discharges measured during a calendar week divided by the number of daily discharges measured during that week. In the specific example, the weekly BOD₅ averages were calculated as follows:

<u>Period</u>	<u>Calculation</u>	<u>Weekly Average(mg/L)</u>	<u>Monthly Average</u>
1/1-1/7	$\frac{40.0+19.1}{2}$	29.6	
1/8-1/14	$\frac{6.2+10.3}{2}$	8.3	
1/15-1/21	$\frac{10.2+12.0}{2}$	11.1	
1/22-1/28	$\frac{7.1+10.1}{2}$	8.6	17.8

Therefore, the highest average weekly concentration was 29.6 mg/L. (Note that the weekly average concentration for the calendar week beginning 1/29 has not been calculated for the January, DMR. This calculation would be reported in the month in which the calendar week ends - February.) Subsequently, a monthly average concentration of 17.8 mg/L, a weekly average concentration of 29.6 mg/L (1/1-1/7), and a maximum daily concentration of 45.6 mg/L (1/30) have been reported in the respective Sample Measurement blocks. Influent BOD, concentrations and influent and effluent TSS concentrations were similarly calculated. **(Note that this is an example of when the**

description contained in the Permit Requirement row supercedes the column header of the DMR.)

b. Quantity or Loading Block Entry

The "average monthly loading" is calculated by dividing the total of the daily loads, as derived from each day's calculated measurement, by the number of days during the month the measurements were made. In completing calculations for these averages, quantities or loadings are to be reported in lbs/day or kg/day (depending on the unit requirement stipulated in the Permit Requirement block) using the following equations:

$$\text{Quantity (lbs/day)} = \text{Flow (MGD)} \times \text{conc. (mg/L)} \times 8.34 \text{ (conv.)}$$

$$\text{Quantity (kg/day)} = \text{Flow (MGD)} \times \text{conc. (mg/L)} \times 3.79 \text{ (conv.)}$$

In our specific example; the NPDES permit requires that quantities be monitored and reported in lbs/day (see units column under "Quantity or Loading" header)

[conc. = concentration ; conv. = conversion factor]

Effluent 5-Day Biochemical Oxygen Demand (BOD₅)

Date Flow (MGD) x BOD₅ (mg/L) x 8.34 = Quantity (lbs/day)

1/3	.33	40.0	8.34	110.09
1/4	.33	9.1	8.34	52.57
1/9	.47	6.2	8.34	24.30
1/10	.42	10.3	8.34	36.08
1/18	.60	10.2	8.34	51.04
1/19	.46	12.0	8.34	46.04
1/22	.52	7.1	8.34	30.79
1/23	.40	10.1	8.34	33.69
1/30	.45	45.6	8.34	171.14
Total:				555.74

The monthly average effluent loading was then calculated by dividing the total monthly loading by the number of sample measurements taken during the month:

$$\begin{aligned} \text{Monthly avg.} &= \frac{\text{Total Monthly Loading}}{\text{No. of Sample Measurements}} \\ &= \frac{555.74}{9} = 61.75 \text{ lbs / day} \end{aligned}$$

Subsequently, the monthly average and maximum daily BOD₅ effluent loadings have been reported as 61.75 lbs/day and 171.14 lbs/day (1/30), respectively. Influent BOD₅ and influent and effluent TSS loadings were similarly calculated.

c. Daily

Maximum daily discharge limitation means the highest allowable "daily discharge". Daily discharge means the "discharge of a pollutant" measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the "daily discharge" is calculated as the total mass of

the pollutant discharge over the day. For pollutants with limitations expressed in other units of measurement, the "daily discharge" is calculated as the **average** measurement of the pollutant over the day. [40 CFR §122.2]

d. Exceedances

The total number of exceedances (permit conditions exceeded) for the monthly and weekly average and daily maximum loadings must be entered in the "No. Ex." Block. In the sample illustration, there were no exceedances of either the permit concentration limits or permit quantity limits. Therefore, the total number of exceedances was reported as "0".

e. Sampling Frequency

The example facility is required to take BOD₅ samples twice per week whereas the required sampling frequency for Total Suspended Solids is once per week. While this might be an unusual situation, we have used this example to illustrate different frequency of analysis computer codes. Note: **ATTACHMENT C** - Frequency of Analysis Code Table indicates the PCS code for twice/week sampling of 02/07, and once/week sampling of 01/07, respectively. ATTACHMENT C lists the only valid codes for reporting frequency of analysis.

f. Sample

Composite-Samples were taken for BOD₅ and TSS. **ATTACHMENT D**, Sample Type indicates the computer code for composite sampling to be "CP", or, 24-hour composite would be "24".

2. pH

NPDES permit limits for pH are listed in the Permit Requirement row. For the specific example, the Permit Requirement row established minimum and maximum allowable pH limits. In the example data in **ATTACHMENT A**, the pH measurement data indicated a minimum pH of 6.26 and a maximum pH of 8.33. The number of Exceedances was three (two exceedances of the minimum limit - 1/11 & 1/12 plus one exceedance of the maximum limit - 1/4). The Frequency of Analysis was daily (01/01) and the Sample Type was grab (GR).

3. Flow

The DMR indicates that the NPDES Permit limit for the monthly average flow is 2.0 MGD, and requires that the maximum daily flow be monitored and reported in MGD. The monthly average flow from the sample illustration, **ATTACHMENT A** was computed to be 0.44 MGD. The daily maximum flow is the highest daily flow observed during the monthly reporting period while the minimum is the lowest. The maximum flow of 0.64 MGD occurred on 1/29 and the minimum flow of 0.25 MGD occurred on 1/7. The total number of exceedances (permit conditions exceeded) for only the average flow (the maximum flow is not limited) must be entered in the "No. EX" block on the report. In the specific example, this number was "0". The Frequency of Analysis was continuous (99/99) and the sample type was recorder (RC).

NEW PERMIT FLOW LANGUAGE for Massachusetts municipal and privately owned sanitary wastewater facilities (e.g. condominiums, nursing homes) with permits issued since 2001:

If your flow is an annual average limit, report maximum and minimum daily rates and total flow for each operating date. This is an annual average limit, which shall be reported as a rolling average. The first value will be calculated using the monthly average flow for the first full month ending after the effective date of the permit and the eleven previous monthly average flows. Each subsequent month's DMR will report the annual average flow that is calculated from that month and the previous 11 months.

4. Total Chlorine Residual

The NPDES permit limits the maximum total chlorine residual concentration to 0.05 mg/L. **ATTACHMENT A** indicates that the maximum total chlorine residual was 0.3 mg/L. The Total number of reported exceedances was four, which was entirely comprised of violations of the maximum permit limit (1/8, 1/10, 1/23, 1/24). Sampling type was grab (GR).

EXAMPLE FOR YOUR INFORMATION: If the parameter is sampled more than once per day, the daily maximum would be the highest sample day, averaged.

5. Fecal Coliform/Total Coliform/E-coli

The permit Requirement row requires the calculation of monthly and weekly geometric means. These calculations are best performed using a hand calculator with at least one memory and log function key. Add the logarithms of the sample measurements taken during the statistical basis period (weekly, or monthly), divide the total by the number of sample measurements and take the antilog of the result to determine the geometric mean. For example, the monthly geometric mean of fecal coliform measurements in the example was calculated as follows:

$$\begin{aligned} \log(240) + \log(140) + \log(80) + \log(1000) + \log(50) / 5 &= \\ (2.3802 + 2.1461 + 1.9031 + 3.000 + 1.6990) / 5 &= 2.2257 \\ \text{antilog}(2.2257) &= 168 \end{aligned}$$

What happens when there is a zero (0)? You must add '1' (one) to each of the results and then subtract '1' from the answer (also below).

EXAMPLE:

Geometric mean calculation without correction:

	Mon	Wed	Fri	Weekly GM	Monthly GM
Week 1	41	34	29	34.3	
Week 2	27	39	0	ERR	
Week 3	0	56	18	ERR	
Week 4	51	37	29	38.0	ERR
				Limit=50	Limit=15

Geometric mean calculation with correction:

Adding '1' to each value and subtracting '1' from the result

	Mon	Wed	Fri	Weekly GM	Monthly GM
Week 1	42	35	30	34.3	
Week 2	28	40	1	9.4	
Week 3	1	57	19	9.3	
Week 4	52	38	30	38.0	18.6
				Limit=50	Limit=15

SAMPLE of WEEK 1

Geometric mean of 41, 34, 29 = 34.3
 Geometric mean of 42, 35, 30 = 35.3; 35.3 - 1 = 34.3

SAMPLE of WEEK 2

Geometric mean of 27, 39, 0 = ERROR
 Geometric mean of 28, 40, 1 = 10.4; 10.4 - 1 = 9.4

TNTC: If you have a value that is too numerous to count 'TNTC', write 'TNTC' in the **daily maximum** block(s), record the exceedance, in the No.Ex. block. To calculate the GEO Means, discard the TNTC value(s) and use only the valid test results to calculate the monthly and weekly GEO Means. (This technique will result in an underestimation of the weekly and monthly geometric means.) Submit an explanation of the TNTC including the dilutions used in the test, and if necessary, how it was resolved. If additional monitoring was taken, report it in the Frequency of Analysis block.

6. BOD₅ and TSS Percent Removal Calculations

% removal calculations must be performed using the following formula:

$$\% \text{ Removal} = \frac{\text{Mon. Avg. Influent Conc.} - \text{Mon. Avg. Effluent Conc.}}{\text{Mon. Avg. Influent Conc.}} * 100$$

Monthly Average Influent TSS Concentration = 177.0
 Monthly Average Effluent TSS Concentration = 14.5

$$\% \text{ Removal TSS} = \frac{177.0 - 14.5}{177.0} * 100 = 91.8\%$$

It should be noted that the monthly average percent removal **is not** calculated by averaging the daily percent removal values. Instead, the monthly average percent (%) removal is calculated from two numbers; the average influent concentration and the average effluent concentration for that month.

7. No Analytical Result

Although not displayed on the sample DMR, the situation may occur where no analytical result can be reported. Refer to **ATTACHMENT E** for a listing of acceptable NODI codes.

8. Toxicity Reporting

We encourage your use of **ATTACHMENT F**, the Toxicity Test Summary Sheet. This sheet should be filled out by your biomonitoring laboratory and forwarded along with your complete Whole Effluent Toxicity lab report. Completion of this sheet will facilitate the review of biomonitoring data. Test results should also be included on your DMR, where applicable, i.e. 001T. See **ATTACHMENT F and G**.

ATTACHMENT A

Monthly Monitoring Data (Sample) January, 2000

			<u>Flow</u>		<u>BOD₅</u>	<u>TSS</u>	<u>pH</u>	<u>CL</u>	<u>SS</u>	<u>Feca</u> <u>l</u>
<u>1st Week</u>	<u>Date</u>				I	E	I	E		
1	Sun	1/1	.50							
2	Mon	1/1	.32				7.31	BDL	0.1	.240
3	Tue	1/3	.33	192.2		40.0	185.4	7.78	BDL	
							34.0		7.46	BDL
4	Wed	1/4	.33	212.0		19.1			8.33	BDL
5	Thu	1/5	.43				6.81	BDL	0.0	
6	Fri	1/6	.34				7.24	BDL		
7	Sat	1/7	.25				7.45	BDL		
<u>2nd Week</u>										
8	Sun	1/8	.58				7.61	0.2	0.1	140
9	Mon	1/9	.47	186.1		6.2	163.1	3.3	7.42	BDL
10	Tue	1/10	.42	200.3		10.3			7.07	0.1
11	Wed	1/11	.37				6.26	BDL		
12	Thu	1/12	.46				6.49	BDL	0.1	
13	Fri	1/13	.32				7.07	BDL		
14	Sat	1/14	.27				7.08	BDL		
<u>3rd Week</u>										
15	Sun	1/15	.62				7.45	BDL	0.1	80
16	Mon	1/16	.61				7.55	BDL		
17	Tue	1/17	.61				6.97	BDL	0.1	
18	Wed	1/18	.60	206.1		10.2	187.0	14.2	7.30	BDL
19	Thu	1/19	.46	183.0		12.0			6.84	BDL
20	Fri	1/20	.36				7.21	BDL		0.4
21	Sat	1/21	.40				7.43	BDL		
<u>4th Week</u>										
22	Sun	1/22	.42				7.09	BDL		1000
23	Mon	1/23	.52	187.2		7.1	172.5	6.5	6.88	0.08
										0.0
24	Tue	1/24	.40	194.1		10.1			7.27	0.3
25	Wed	1/25	.38				6.98	BDL	0.0	
26	Thu	1/26	.45				7.03	BDL		
27	Fri	1/27	.42				7.14	BDL	0.1	
28	Sat	1/28	.39				7.25	BDL		
<u>5th Week</u>										
29	Sun	1/29	.64				6.85	BDL	0.1	
30	Mon	1/30	.45	215.0		45.6			7.24	BDL
31	Tue	1/31	.44				6.89	BDL	0.1	50

I - Designates Influent

E- Designates Effluent

BDL - Designates a '0' (zero) calculation

PERMITTEE NAME/ADDRESS (Include Facility Name/Location if Different)
NAME XYZ WASTEWATER TREATMENT PLANT
ADDRESS 123 CENTER STREET
NEWTON MA 02116

FACILITY LOCATION
XYZ W W T P
Newton, MA 02116
ATTN: Mr. John Smith, SUPERINTENDENT

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
DISCHARGE MONITORING REPORT (DMR)
(17-19)

MA01000006	001A
PERMIT NUMBER	DISCHARGE NUMBER

(SUBR E)

F - FINAL
TREATED - SANITARY WASTEWATER
Check here if No Discharge

NOTE: Read instructions before completing this form

PARAMETER (32-37)	SAMPLE MEASUREMENT	QUANTITY OR LOADING (46-53)			QUALITY OR CONCENTRATION (54-61)			UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-66)	SAMPLE TYPE (68-70)
		AVERAGE	MAXIMUM	UNITS	MINIMUM	AVERAGE	MAXIMUM				
BOD, 5-DAY (20 DEG. C)	727.02	*****	*****	(26) lbs/dy	*****	197.3	*****	(19) mg/L	0	02/07	CP
00310 GROSS RAW SEW/INFLUENT	REPORT MO AVG	*****	*****	LBS/DY	*****	REPORT MO AVG	*****	MG/L		TWICE/ WEEK	COMPOS
BOD, 5-DAY (20 DEG. C)	61.75	171.14	*****	(26) lbs/dy	17.8	29.6	45.6	(19) mg/L	0	02/07	CP
00310 GROSS EFFLUENT GROSS VALUE	500	REPORT DAILY MX	*****	LBS/DY	30	45	50	MG/L		TWICE/ WEEK	COMPOS
PH	*****	*****	*****	*****	6.26	*****	8.33	(12) SU	3	01/01	GR
00400 GROSS EFFLUENT GROSS VALUE	*****	*****	*****	*****	6.5	*****	8.0	SU		DAILY	GRAB
SOLIDS, TOTAL SUSPENDED	708.36	*****	*****	(26) LBS/DY	*****	177.0	*****	(19) mg/L	0	02/07	CP
00530 GROSS RAW SEW/INFLUENT	REPORT MO AVG	*****	*****	LBS/DY	*****	REPORT MO AVG	*****	MG/L		TWICE/ WEEK	COMPOS
SOLIDS, TOTAL SUSPENDED	51.44	93.57	*****	(26) lbs/dy	14.5	34.0	34.0	(19) mg/L	0	02/07	CP
00530 GROSS EFFLUENT GROSS VALUE	500	REPORT DAILY MX	*****	LBS/DY	30	45	50	MG/L		TWICE/ WEEK	COMPOS
SOLIDS, SETTLEABLE	*****	*****	*****	*****	*****	0.2	0.4	(25) ml/l	2	03/07	GR
00545 1 0 0 EFFLUENT GROSS VALUE	0.44	0.64	*****	(05) MGD	*****	0.44	0.64	DAILY MX ML/L	0	99/99	RC
FLOW, IN CONDUIT OR THRU TREATMENT PLANT	2.0	REPORT DAILY MX	*****	*****	*****	0.44	0.64	DAILY MX ML/L	0	99/99	RC
50050 EFFLUENT GROSS VALUE	*****	*****	*****	*****	*****	*****	*****	*****	0	CONTINUOUS	RECORD

John Smith
SIGNATURE OF PRINCIPAL EXECUTIVE
OFFICER OR AUTHORIZED AGENT

TELEPHONE
978 123-4567
DATE
00 02 12

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER
John Smith, Superintendent
TYPED OR PRINTED

COMMENTS AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)

REPORT MAXIMUM + TOTAL FLOW RATES FOR EACH OPERATING DAY. WHOLE EFFLUENT TOXICITY: ON DMR 0011.

PERMITTEE NAME/ADDRESS (Include Facility Name/Location if Different)
NAME XYZ WASTEWATER TREATMENT PLANT

ADDRESS 123 Center Street
Newton, MA 02116
XYZ W W T P

FACILITY LOCATION
Newton, MA 02116
ATTN: JOHN SMITH SUPERINTENDENT

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
DISCHARGE MONITORING REPORT (DMR)

MINOR ATTACHMENT B-2
(SUBR E)
F-FINAL
TREATED SANITARY WASTEWATER

MA01000006
PERMIT NUMBER

001 A
DISCHARGE NUMBER

MONITORING PERIOD
YEAR MO DAY YEAR MO DAY
FROM 00 01 01 TO 00 01 31

☐ Check here if No Discharge

NOTE: Read Instructions before completing this form

PARAMETER (32-37)	(3 Card Only) (46-53) QUANTITY OR LOADING			(4 Card Only) (39-45) QUANTITY OR CONCENTRATION			NO. EX (42-43)	FREQUENCY OF ANALYSIS (64-66)	SAMPLE TYPE (69-70)	
	AVERAGE	MAXIMUM	UNITS	MINIMUM	AVERAGE	MAXIMUM				UNITS
CHLORINE TOTAL RESIDUAL	SAMPLE MEASUREMENT	*****	*****	*****	*****	0.3	(19) mg/l	4	01/01	GR
50060 1 0 0	PERMIT REQUIREMENT	*****	*****	*****	*****	MAXIMUM	MG/L		DAILY	GRAB
EFFLUENT GROSS VALUE	SAMPLE MEASUREMENT	*****	*****	*****	*****	1000	(13) # / 100 ML	2	01/07	GR
COLIFORM, FECAL GENERAL	PERMIT REQUIREMENT	*****	*****	*****	*****	200 NO GEO	WEEKLY GROSSLY MX	0	ONCE / MONTH	CALCTO
74055 1 0 0	SAMPLE MEASUREMENT	*****	*****	*****	*****	91.0	*****	0	01/30	CA
EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	*****	*****	*****	*****	85 NO AVG	*****	0	ONCE / MONTH	CALCTO
80D/ 5-DAY PERCENT REMOVAL	SAMPLE MEASUREMENT	*****	*****	*****	*****	91.8	*****	0	01/30	CA
81010 K 0 0	PERMIT REQUIREMENT	*****	*****	*****	*****	85 NO AVG	*****	0	ONCE / MONTH	CALCTO
PERCENTREMOVAL	SAMPLE MEASUREMENT	*****	*****	*****	*****					
SOLIDS, SUSPENDED PERCENT REMOVAL	PERMIT REQUIREMENT	*****	*****	*****	*****					
91011 K 0 0	SAMPLE MEASUREMENT	*****	*****	*****	*****					
PERCENTREMOVAL	PERMIT REQUIREMENT	*****	*****	*****	*****					
	SAMPLE MEASUREMENT									
	PERMIT REQUIREMENT									
	SAMPLE MEASUREMENT									
	PERMIT REQUIREMENT									
	SAMPLE MEASUREMENT									
	PERMIT REQUIREMENT									

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER

John Smith, Superintendent

TYPED OR PRINTED

SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT

John Smith

TELEPHONE

978 123 4567

DATE

00 02 12

COMMENTS AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)

SEE PERMIT FOR ADDITIONAL MONITORING AND REPORTING REQUIREMENTS. ALSO REFER TO THE GENERAL PERMIT CONDITIONS AND ANY OTHER ATTACHMENTS TO YOUR PERMIT.

PERMITTEE NAME/ADDRESS (Include Facility Name/Location if Different)
NAME XYZ W W T P
ADDRESS 123 Center Street
Newton MA 02116

FACILITY XYZ W W T P
LOCATION NEWTON

ATTN: JOHN SMITH

MA 02116

MONITORING PERIOD						
YEAR	MO	DAY		YEAR	MO	DAY
00	10	01	TO	00	12	31

FROM	TO
00 10 01	00 12 31
(20-21) (22-23) (24-25)	(26-27) (28-29) (30-31)

☐ Check here if No Discharge

NOTE: Read instructions before completing this form

QUARTERLY TOXICITY DATA


(SUBR C)
F-FINAL

F-FINAL

MAJOR

EFFLUENT

☐ Check here

PARAMETER (32-37)	X	(3 Card Only) (46-53)			QUANTITY OR LOADING (54-61)			(4 Card Only) (38-46)				QUALITY OR CONCENTRATION (49-53)			MAXIMUM (54-61)	UNITS	NO. EX (52-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
		AVERAGE	MAXIMUM	UNITS	MINIMUM	AVERAGE	MAXIMUM	UNITS											
LC50 STATRE 48HR ACUCERIODAPHNIA	SAMPLE MEASUREMENT	*****	*****		100.0%	*****	*****	(23)	0	01/90	24								
TAM3810 GROSS VALU	PERMIT REQUIREMENT	*****	*****	***	100 Daily MN	*****	*****	Per- cent		gtrlycomp24									
NOEL STAT & DAY CHR ERIODAPHNIA	SAMPLE MEASUREMENT	*****	*****		6.25%	*****	*****	(23)	0	01/90	24								
TBD38 1 0 0	PERMIT REQUIREMENT	*****	*****	***	10 Daily NN	*****	*****	per- cent		gtrlycomp24									
EFFLUENT GROSS VALU	SAMPLE MEASUREMENT																		
	PERMIT REQUIREMENT																		
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NAME/TITLE PRINCIPAL EXECUTIVE OFFICER		I CERTIFY UNDER PENALTY OF LAW THAT THIS DOCUMENT AND ALL ATTACHMENTS WERE PREPARED THAT QUALIFIED PERSONNEL, INCLUDING AND INCLUDING THE INFORMATION SUBMITTED BASED ON MY KNOWLEDGE AND BELIEF TRUE, ACCURATE AND COMPLETE. I AM NOT PROVIDING ANY INFORMATION THAT IS UNLAWFUL TO DISCLOSE OR VIOLATES U.S.C. § 1031 AND 33 U.S.C. § 1311. (Penalties under these statutes may include fines up to \$10,000 and or maximum imprisonment of not more than 5 years and 5 years.)																	
JOHN SMITH SUPERINTENDENT		TELEPHONE 938 4567																	
TYPED OR PRINTED		DATE 00 10 31																	
		SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT 																	

F-100 REPORT NUMBER		COMMENTS AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)
1	2	

PERMITTEE NAME/ADDRESS (Include Facility Name/Location if Different)

NAME XYZ W W T P

ADDRESS 123 CENTER STREET
NEWTON MA 02116

FACILITY XYZ W W T P

LOCATION NEWTON MA 02116

ATTN: JOHN SMITH SUPERINTENDENT DPW

PARAMETER
(32-37)

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
DISCHARGE MONITORING REPORT (DMR)

(17-18)

MA01000006
PERMIT NUMBER

SL1 A
DISCHARGE NUMBER

MONITORING PERIOD
YEAR MO DAY YEAR MO DAY
FROM 00 10 01 TO 00 12 31

MAJOR SLUDGE
Check here if No Discharge

NOTE: Read instructions before completing this form

ATTACHMENT B-4

SLUDGE

(SUBR C)

F.F. FINAL

PARAMETER (32-37)	SAMPLE MEASUREMENT	QUANTITY OR LOADING (54-61)			QUALITY OR CONCENTRATION (54-61)			NO. EX (52-53)	FREQUENCY OF ANALYSIS (54-58)	SAMPLE TYPE (59-70)
		AVERAGE (46-53)	MAXIMUM (54-61)	UNITS (54-61)	AVERAGE (46-53)	MAXIMUM (54-61)	UNITS (54-61)			
ARSENIC DRY WEIGHT		*****	*****	*****	*****	*****	*****	*****	01/90	GR
01003 + 0 0 SLUDGE	PERMIT REQUIREMENT	*****	*****	*****	*****	*****	*****	*****	*****	*****
NICKEL DRY WEIGHT		*****	*****	*****	*****	*****	*****	*****	*****	*****
78469 + 0 0 SLUDGE	PERMIT REQUIREMENT	*****	*****	*****	*****	*****	*****	*****	*****	*****
CHROMIUM DRY WEIGHT		*****	*****	*****	*****	*****	*****	*****	*****	*****
78473 + 0 0 SLUDGE	PERMIT REQUIREMENT	*****	*****	*****	*****	*****	*****	*****	*****	*****
	SAMPLE MEASUREMENT									
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ATTACHMENT C FREQUENCY OF ANALYSIS CODES

N/A	NOT	APPLIC	03/01	THREE/	DAY
N/R	NOT	REPORTD	03/05	THREE/	5 DAYS
N/V	NOT	VALID	03/07	THREE/	WEEK
AL/EV	ALL	EVENTS	03/08	THREE/	8 DAYS
AL/RN	ALTERNTRUN		03/30	THREE/	MONTH
BI/WK	BI-	WEEKLY	03/5Y	THREE/	5 YEARS
CL/OC	CHLRNTN/OCCURS		03/6M	THREE/	6MONTHS
DL/DS	DLY WHNDISCHRG		03/90	THREE/	QUARTER
ESTMT	ESTI-	MATE	03/99	SEE	PERMIT
LF/PT	LIFE/	PERMIT	04/BA	FOUR/	BATCH
MEASD	MEA-	SURED	04/RP	FOUR/	RPT PER
MM/WD	MONTHLYWHN DIS		04/YR	FOUR/	YEAR
N/R	NOT	REPORTD	04/01	FOUR/	DAY
REPRT	REPORT		04/07	FOUR/	WEEK
WH/DS	WHEN	DISCHRG	04/30	FOUR/	MONTH
WH/MN	MEASRD WHN MON		04/90	4 TIMES/	QRTLY
01/BA	ONCE/	BATCH	04/99	SEE	PERMIT
01/DD	ONCE/	DSCHDY	05/BA	FIVE/	BATCH
01/DM	ONCE/	DSCHMN	05/DW	5 DAYS/	WEEK
01/DQ	ONCE/	DSCHQTR	05/WK	5 TIMES/	WEEK
01/DS	ONCE/	DISCHG	05/01	5 TIMES/	DAY
01/DW	ONCE/	DSCHWK	05/07	WEEK-	DAYS
01/HV	ONCE/	HARVEST	05/08	FIVE/	8 DAYS
01/OC	ONCE/	OCCURNC	05/30	5 TIMES/	MONTH
01/RN	ONCE /	RN EVNT	05/90	FIVE/	QRTLY
01/RP	ONCE/	RPT PER	05/99	SEE	PERMIT
01/SH	ONCE/	SHIFT	06/SH	SIX/OPR	SHIFT
01/SN	ONCE/	SEASON	06/01	SIX/	DAY
01/YR	ANNUAL		06/07	SIX/	WEEK
01/01	DAILY		06/30	6 TIMES/	MONTH
01/02	ONCE/	2 DAYS	06/90	SIX/	QRTLY
01/03	ONCE/	3 DAYS	06/99	SEE	PERMIT
01/04	ONCE/	4 DAYS	07/WD	WEEKLY WHN DIS	
01/05	ONCE/	5 DAYS	07/WK	7 TIMES/	WEEK
01/06	ONCE/	6 DAYS	07/14	7 PER	2 WEEKS
01/07	WEEKLY		07/30	7 TIMES/	MONTH
01/08	ONCE/	8 DAYS	07/99	SEE	PERMIT
01/09	ONCE/	9 DAYS	08/BA	EIGHT/	BATCH
01/10	ONCE/	10 DAYS	08/01	EIGHT/	DAY
01/11	ONCE/	11 DAYS	08/30	EIGHT/	MONTH
01/12	ONCE/	12 DAYS	08/99	SEE	PERMIT
01/13	ONCE/	13 DAYS	09/01	NINE/	DAY
01/14	ONCE/	2WEEKS	09/30	NINE/	MONTH
01/2Y	ONCE/	2 YEARS	09/99	SEE	PERMIT
01/21	ONCE/	3 WEEKS	10/30	TEN/	MONTH
01/28	ONCE/	4WEEKS	10/99	SEE	PERMIT
01/30	ONCE/	MONTH	11/30	ELEVEN/	MONTH
01/4M	ONCE/	4 MONTH	12/01	TWELVE/	DAY
01/5M	ONCE/	5MONTHS	12/30	12 PER	MONTH
01/5Y	ONCE/	5 YEARS	13/30	THIRTN/	MONTH
01/6M	ONCE/	6MONTHS	14/30	FOURTN/	MONTH
01/60	ONCE/	2MONTH	15/30	FIFTEEN/	MONTH
01/7M	ONCE/	7MONTHS	16/01	SIXTEEN/	DAY
01/8H	ONCE/	8 HOURS	16/30	16 PER	MONTH
01/90	QTRLY		17/30	SEVNTN/	MONTH
01/99	INSTNT		18/01	EIGHTEEN/	DAY
02/BA	TWICE/	BATCH	18/30	EIGHTEEN/	MONTH
02/DA	2 DAYS/	WEEK	19/30	NINETN/	MONTH
02/DD	TWICE/	DRWDOWN	20/30	TWENTY/	MONTH
02/DS	TWICE/	DISCH	21/30	TWTYONE/	MONTH
02/DW	TWICE/	DSCHWK	22/30	TWTYTWO/	MONTH
02/RP	TWICE/	RPT PER	23/30	TWTYTHR/	MONTH
02/SH	TWICE/	SHIFT	24/01	HOURLY	
02/YR	SEMI-	ANNUAL	24/30	TWTYFOR/	MONTH
02/01	TWICE/	DAY	25/30	TWTYFIV/	MONTH
02/07	TWICE/	WEEK	26/30	TWTYSIX/	MONTH
02/12	TWICE/	12 DAYS	27/30	TWTYSVN/	MONTH
02/30	TWICE/	MONTH			
02/90	TWICE	QTRLY	28/30	TWTYEGT/	MONTH
02/99	SEE	PERMIT	29/30	TWTYNIN/	MONTH
03/BA	THREE/	BATCH	48/01	EVERY	1/2 HR
03/DS	THREE/	DISCHG	66/66	WPC	PLAN
03/DW	3 DAYS/	WEEK	77/77	CONTIN-	GENT
03/RP	THREE/	RPT PER	88/88	CLEAN-	ING
03/YR	THREE/	YEAR	99/99	CONTIN-	UOUS

CODES that may be printed on your DMR == for information only

ALLWLOADALLOWED LOAD	ROLL AVGROLLING AVERAGE
ANNL AVGANNUAL AVERAGE	RPT AVG REPORTED AVERAGE
ANNL MAXANNUAL MAXIMUM	RPT MIN REPORTED MINIMUM
ANNL TOTANNUAL TOTAL	RPT/ALACRPT ALLOWED/RPT ACTUAL
ARI MEANARITHMETIC MEAN	INDROLAVINDIV 12 MO ROLLING AVE
AVERAGE AVERAGE	AGGROLAVAGGRV 12 MO ROLLING AVE
AVG BDL AVERAGE BELOW DETECTABLE	SINGSAMP SINGLE SAMPLE
AV VALUE AVERAGE VALUE	SM2CNSAMP SINGLE MV CONC. SAMPLE
AN MS LDANNUAL MASS LOADING	SEMI AVGSEMI AVERAGE
DA GEOAVDAILY GEOMETRIC AVERAGE	SINGAMGESINGLE SAMPLE GEOMETRIC
DAILY AVDAILY AVERAGE	SING RDGSINGLE READINGS
DAILY MNDAILY MINIMUM	SUCCRDGS SUCCESSFULL READINGS
DAILY MXDAILY MAXIMUM	SEMI MINSEMI MINIMUM
DLYAVMINDAILY AVERAGE MINIMUM	SEMI MAXSEMI MAXIMUM
DLYMDIANDAILY MEDIAN	TOTAMTAPTOTAL AMOUNT APPLIED
DPD AVG DISCHARGE PER DAY AVERAGE	TOTAL TOTAL
DPD GEO DISCHARGE PER DAY GEOMET.	WKLY AVGWEEKLY AVERAGE
DPD MAX DISCHARGE PER DAY MAXIMUM	WKLY GEOWEEKLY GEOMETRIC
DPD MIN DISCHARGE PER DAY MINIMUM	WKLY MAXWEEKLY MAXIMUM
DPD TOT DISCHARGE PER DAY TOTAL	WKLY MINWEEKLY MINIMUM
DA GEOMNDAILY GEOMETRIC MINIMUM	WK GEOMN WEEKLY GEOMETRIC MEAN
DA GEO DAILY GEOMETRIC	>BKGND >BACKGROUND
DISCHARGE DISCHARGED	YTD TOT YEAR-TO-DATE TOTAL
EVNT TOTEVENT TOTAL	YRLY MINYEARLY MINIMUM
GEO MEANGEO METRIC MEAN	1DA GEO 1 DAY GEOMETRIC
HI 7D AVHIGH 7 DAY AVERAGE	10%-60DA10% OVER 60 DAYS
HI WK AVHIGH WEEKLY AVERAGE	12M D AV12 DAY AVERAGE
INST MAXINSTANTANEOUS MAXIMUM	12MO AVG12 MONTH AVERAGE
INST MININSTANTANEOUS MINIMUM	12MTDFWA12 MONTH DAILY WATER FLOW
INSTMNGEINSTANTANEOUS MIN. GEOM.	120DA AV120 DAY AVERAGE
LOG MEANLOGARITHMIC MEAN	180DARME180 DAY ARITHMETIC MEAN
LOGMOMEDLOGRITHMIC MONTHLY MEDIAN	1DA AVG 1 DAY AVERAGE
LBS/EVNTPOUNDS PER EVENT	1 HR AVG1 HOUR AVERAGE
MAX BDL MAXIMUM BDL	1DA MIN 1 DAY MINIMUM
MAXIMUM MAXIMUM	20%-30DA20% OVER 30 DAYS
MEAN MEAN	30DA GM 30 DAY GEOMETRIC MEAN
MEDIAN MEDIAN	30DA ARI30 DAY ARITHMETIC
MINIMUM MINIMUM	30DA AVG30 DAY AVERAGE
MN % RMV MINIMUM PERCENT REMOVAL	30DA GEO30 DAY GEOMETRIC
MN WK AVMINIMUM WEEKLY AVERAGE	30DA MAX30 DAY MAXIMUM
MN 7D AVMINIMUM 7 DAY AVERAGE	30DAARME30 DAY ARITHMETIC MEAN
MN7DGEOAMINIMUM 7 DAY GEO. AVG.	30DAVGEO30 DAY AVERAGE GEOMETRIC
MO AV MNMONTHLY AVERAGE MINIMUM	4 DA AVG4 DAY AVERAGE
MO AVG MONTHLY AVERAGE	4 DA MAX4 DAY MAXIMUM
MO GEO MONTHLY GEOMETRIC	48HR MX 48 HOUR MAXIMUM
MO GEOMNMONTHLY GEOMETRIC MEAN	4 HR AVG4 HOUR AVERAGE
MO MAX MONTHLY MAXIMUM	48HR MIN48 HOUR MINIMUM
MO MIN MONTHLY MINIMUM	50TH % 50TH PERCENTILE
MO TOTALMONTHLY TOTAL	5 DA AVG5 DAY AVERAGE
MX DA AVMAXIMUM DAILY AVERAGE	6 MO MED6 MONTH MEDIAN
MX HR RTMAXIMUM HOURLY RATE	6HRMEAN 6 HOUR MEAN
MX WK AVMAXIMUM WEEKLY AVERAGE	6HRGMEAN6 HOUR GEOMETRIC MEAN
MX 7D AVMAXIMUM 7 DAY AVERAGE	6 MO AVG6 MONTH AVERAGE
MX 7D GMAXIMUM 7 DAY GEOMETRIC	6 HR AVG6 HOUR AVERAGE
MX7DGEOAMAXIMUM 7 DAY GEO. AVG.	6 HR GEO6 HOUR GEOMETRIC
MXSINSAMMAXIMUM SINGLE SAMPLE	7 DA AVG7 DAY AVERAGE
MO GEOMXMONTHLY GEOMETRIC MAXIMUM	7 DA GEO7 DAY GEOMETRIC
MO LOAD MONTHLY LOADING	7 DA MED7 DAY MEDIAN
MN VALUEMINIMUM VALUE	7 DA MIN7 DAY MINIMUM
MX VALUEMAXIMUM VALUE	7 DA MAX7 DAY MAXIMUM
MX30DAAVMAXIMUM 30 DAY AVERAGE	7DA ARI 7 DAY ARITHMETIC
MX MO AVMAXIMUM MONTHLY AVERAGE	7DA ARME7 DAY ARITHMETIC MEAN
MO MED MONTHLY MEDIAN	75TH % 75TH PERCENTILE
NONSP AVNON-SPECIFIC AVERAGE	80TH % 80TH PERCENTILE
NONSP MXNON-SPECIFIC MAXIMUM	90TH % 90TH PERCENTILE
QRTR AVGQUARTERLY AVERAGE	90DA AVG90 DAY AVERAGE
QRTR MAXQUARTERLY MAXIMUM	90DA 90%90 DAY, 90 PERCENT
QRTR MINQUARTERLY MINIMUM	96 HOUR 96 HOUR
QTRTOTALQUARTERLY TOTAL	

ATTACHMENT D

SAMPLE TYPES

[or]

[or]

CA	CALCTD	RF	RCDFLO
CG	CMPGRB	RG	RANG-C
CN	CONTIN	RP	REPRES
CP	COMPOS	RT	RCOTOT
CR	CK REQ	R4	RNG-4A
CS	CORSAM	SB	SQBCHR
CT	CERTIF	SE	SNGLES
CU	CURVE	SM	SUMATN
DA	DAILAV	SR	SGLRDG
DS	DISCRT	SS	STAT-SH
ES	ESTIMA	ST	STATIC
FI	FLOIND	TI	TIMEMT
GH	5GR24H	TM	TOTALZ
GM	GRAB10	VI	VISUAL
GR	GRAB	01	COMP-1
G2	GRAB-2	02	COMP-2
G3	GRAB-3	03	COMP-3
G4	GRAB-4	04	COMP-4
G5	GRAB-5	05	COMP-5
G6	GRAB-6	06	COMP-6
G7	GRAB-7	08	COMP-8
G8	GRAB-8	1H	AVG-1H
G9	GRAB-9	10	COMP10
IM	IMERSN	12	COMP12
IN	INSTAN	16	COMP16
IS	INSITU	2H	AVG-2H
IT	IMRSTB	20	COMP20
MC	MATHCL	22	BATCH
MP	MATHCP	24	COMP24
MS	MEASRD	28	COMP28
MT	METER	3G	3GR/HR
NA	NOT AP	4C	4DA24C
NR	NOTRPT	4H	AVG-4H
OC	OCCURS	5G	5GR45M
PC	PMPCRV	72	COMP72
PL	PMPLOG	96	COMP96
RC	RCORDR		
RD	RNG-DA		

ATTACHMENT E**No Data Indicator Code (NODI)**

CODE	DESCRIPTION
A	GENERAL PERMIT EXEMPTION
C	NO DISCHARGE
D	LOST SAMPLE
E	ANALYSIS NOT CONDUCTED
F	INSUFFICIENT FLOW FOR SAMPLING
G	SAMPLING EQUIPMENT FAILURE
H	INVALID TEST
I	LAND APPLIED WASTE WATER
J	RECYCLED, WATER-CLOSED SYSTEM
K	FLOOD DISASTER
L	DMR RECEIVED BUT NOT ENTERED
M	NOT APPLICABLE DURING SLUDGE MONITOR PERIOD
N	NOT TRACKED IN PCS FOR THIS PERIOD
Q	NOT QUANTIFIABLE
R	ADMINISTRATIVELY RESOLVED
1	WRONG FLOW
2	OPERATIONS SHUTDOWN
3	LOW LEVEL PRODUCTION
4	LAGOON PROCESSING
5	FROZEN CONDITIONS
6	PRODUCTION BASED LIMITS DON'T APPLY TO MONITORING PERIOD
7	DMR RECEIVED, PRODUCTION OR FLOW RELATED
8	OTHER
9	MONITORING IS CONDITIONAL/NOT REQUIRED THIS MONITORING PERIOD

If you use a NODI code, do not enter values for Frequency of Analysis nor for Sample Type. Enter the NODI anywhere on the applicable parameter line, circled. Or, if a NODI is for an entire outfall, enter in the box on the top right of the DMR. Submit an explanation when using a NODI Code. NODI codes L, N, R, and 8 are for US EPA and State use only.

ATTACHMENT F

TOXICITY TEST SUMMARY SHEET

Facility Name: _____ Test Start Date: _____
 NPDES Permit Number: _____ Pipe Number: _____

<u>Test Type</u>	<u>Test Species</u>	<u>Sample Type</u>	<u>Sample Method</u>
___ Acute	___ Fathead Minnow	___ Prechlorinated	___ Grab
___ Chronic	___ Ceriodaphnia	___ Dechlorinated	___ Composite
___ Modified	___ Daphnia Pulex	___ Chlorine	___ Flow-thru
___ (Chronic	___ Mysid Shrimp	___ Spiked in Lab	___ Other
Reporting	___ Sheepshead	___ Chlorinated	
acute	___ Menidia	___ On Site	
Values)	___ Sea Urchin	___ Unchlorinated	
___ 24 Hour	___ Champia		
Screening	___ Selenastrum		
	___ Other _____		

Dilution Water

___ Receiving water collected at a point upstream of or away from the discharge, free from toxicity or other sources of contamination;
 (Receiving water name: _____)
 ___ alternate surface water of known quality and a hardness, etc. to generally reflect the characteristics of the receiving water;
 (Surface water name: _____)
 ___ synthetic water prepared using either Millipore Mill-Q or equivalent de-ionized water and reagent grade chemicals; or deionized water combined with mineral water;
 ___ or artificial sea salts mixed with deionized water;
 ___ deionized water and hyper saline brine; or
 ___ other _____

Effluent Sampling date (s): _____

Effluent concentrations tested (in %): _____
 *(Permit limit concentration): _____

Was effluent salinity adjusted? _____
 If yes, to what value? _____ PPT
 With sea salts? _____ Hypersaline brine solution? _____

Actual effluent concentrations tested after salinity adjustment
 (In %) : _____

Reference Toxicant test date: _____

(CONTINUED OPPOSITE SIDE)

ATTACHMENT F (Cont.)

PERMIT LIMITS & TEST RESULTS

Test Acceptability criteria

MEAN CONTROL SURVIVAL: _____ MEAN CONTROL REPRODUCTION: _____
 MEAN CONTROL WEIGHT: _____ MEAN CONTROL CELL COUNT: _____

<u>Limits</u>	<u>Results</u>
LC50 _____	LC50 _____
	UPPER VALUE _____
	LOWER VALUE _____
	DATA ANALYSIS _____
	METHOD USED _____
A-NOEC _____	A-NOEC _____
C-NOEC _____	C-NOEC _____
	LOEC _____
IC25 _____	IC25 _____
IC50 _____	IC50 _____

ATTACHMENT G

NPDES Whole Effluent Toxicity Testing, Monitoring and Reporting Tips, Common Pitfalls and Guidance

EPA-New England's review of Whole Effluent Toxicity ("WET") test data has revealed numerous inconsistencies between the test protocols and the reports submitted by National Pollutant Discharge Elimination System ("NPDES") permittees and their analytical laboratories. This document is part of the *2003 DMR Instructions*, available in hard copy from EPA and also posted at Web address www.epa.gov/region01/compliance/enfdmr.html. It was prepared for NPDES permittees: (1) to remind you of NPDES reporting requirements, including the requirement to sign and certify WET reports submitted to EPA and the State; (2) to alert you of common errors detected by EPA in testing and reporting; (3) to provide guidance; and (4) to provide a list of EPA personnel available to answer your questions.

TIPS:

1. **NPDES Permit Requirements**

The sampling location, sample type, test frequency, test species, monitoring period, and reporting requirements are specified in Part I (and ATTACHMENTS) of the NPDES permit. Read your Permit carefully. Permittees and analytical laboratories must adhere to permit requirements and tests protocols. Ultimately the permittee is responsible for data quality, data integrity and NPDES reporting. EPA recommends that you provide your testing laboratory with a copy of your entire NPDES permit (i.e. Part I and ATTACHMENTS, and Part II "General Conditions") and any subsequent modifications together with any alternate dilution water authorization letters. Mistakes have been made that could have been avoided if the bioassay laboratory had had a copy of these documents.

2. **WET Tests Data Quality and Reporting**

Carefully review bioassay tests results and be sure that the data are valid (i.e. the minimum test requirements and test acceptability criteria are met for EPA's standard and EPA - New England Region specific protocol) and are correctly reported on the DMR.

3. **WET Test Scheduling**

Laboratories have scheduled WET tests using test organisms that are at or near the oldest acceptable age for test start. If this is done and there is a delay in sample delivery, the test organisms may be too old for use in the bioassay test when the sample arrives. This could create some scheduling difficulties or could require a contingency plan that includes a secondary emergency source of test organisms. It is suggested that permittees ask whether laboratories have contingency plans for such situations.

4. **Methods Manuals**

The most current methods manuals are as follows:

- a. Weber, C.I. et al., Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms, Fourth Edition, August 1993, EPA/600/4-90/027F;
- b. Lewis, P.A. et al., Short Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Water to Freshwater Organisms, Third Edition, July 1994, EPA/600/4-91/002;

- c. Klemm, D.J. et al., Short Term Methods for Estimating Chronic Toxicity of Effluents and Receiving Water to Marine and Estuarine Organisms, Second Edition, EPA/600/4-91/003; and
- d. Standard Methods for the Examination of Water and Wastewater, 20th Edition, 1998.

COMMON PITFALLS AND GUIDANCE:

To alert you to the common pitfalls and provide guidance to rectify issues where present, the following provides guidance on the use of alternate dilution as well as a summary of the **most common errors detected in testing and reporting:**

1. **WET Monitoring and Reporting**

EPA rejects toxicity test reports that do not follow permit requirements, applicable protocols, and meet all minimum criteria for acceptability of test results, and requires tests to be repeated until valid results are obtained. Valid results must be submitted by the date specified in Part I of the NPDES permit even if the test has to be repeated. Therefore, EPA recommends that sampling and testing be initiated early in the monitoring period prescribed by the permit.

If a valid test is not completed by the reporting deadline, the permittee must report the invalid test using the proper code on the DMR; the code is "H". The cover letter must explain the monitoring and reporting violation and state when the test will be repeated. A corrected DMR must be resubmitted once valid data are available, and the entire report submitted as required by the permit. The report shall include, among other things, bench sheets to document that there was an invalid test and the test was repeated.

2. **Sample Dechlorination**

The total residual chlorine concentration of the effluent sample shall be measured and, if detected, the sample shall be dechlorinated in the laboratory prior to WET testing in accordance with Standard Methods for the Examination of Water and Wastewater, 20th Edition, 1998. The concentration should be reported and the dechlorination method described. The dechlorination method used at the bioassay lab has not always been described in WET reports. For example, dechlorination can be achieved using a ratio of 6.7 mg/L anhydrous sodium thiosulfate to reduce 1.0 mg/L chlorine. An additional thiosulfate control (with the maximum amount of thiosulfate in the lab control or the receiving water control) must also be run if dechlorination is performed. This information must also be included in the report.

3. **Sample Hold Time**

Sample hold time was exceeded at the onset of the test. Sample hold time must be consistent with that specified by test protocol, namely, less than 24 hours old for on-site tests and less than **36 hours** old for off-site tests, as specified in the updated protocols. In isolated cases where the test cannot be started within 36 hours of sample collection, data must be submitted to EPA and the State to demonstrate that the effluent toxicity of a sample is not reduced by extending the holding time beyond 36 hours.

4. **Salinity Adjustment of the Effluent Sample**

When brine solution is used to adjust the salinity of the effluent sample for marine WET testing, it reduces the highest effluent concentration tested to between 70% and 80% effluent. If the Chronic No Observed Effects Concentration ("C-NOEC") limit of the Permit is 100%

(as is the case when an outfall is exposed at low tide), sea salts must be used to adjust salinity so that compliance testing can be done at the 100% effluent concentration. It should be noted that the Region's revised test protocols require the use of sea salts for salinity adjustment in every case; previous protocols allowed the permittee to choose between using brine solution and sea salts.

5. **Age of the Test Organisms**

Tests have been performed using organisms that were older than the age specified by the tests protocol. WET tests are to be conducted during sensitive life stages of the test organism. For that reason, the protocols specify what the age of the test organism must be at test initiation. Evidence of test organism age must be reported.

6. **Raw Data and Bench Sheets**

Raw data and bench sheets were not submitted as required by the permit. These data must be included in the full report.

7. **Report Integrity and DMR Accuracy**

WET test data summary tables have not always been consistent with the report text, data analyses, bench sheets; and/or DMRs. Report integrity and DMR accuracy are crucial, and are the responsibility of the permittee.

8. **Data Analyses**

Inappropriate statistical methods were used on bioassay data sets. Flow charts in the EPA Acute and Chronic WET Test Manuals must be followed so that the correct analyses are performed. Statistical program printouts and graphical displays (LC50 calculations, etc.) are not always submitted. The testing laboratory should make use of the available statistical software to perform the data analyses as described in the protocols attached to the NPDES permit, and must include the printouts with every report. In addition, please be aware that certain statistical programs require a minimum number of replicates which does not necessarily match the minimum number required in the EPA test guidance manual but has been accounted for under EPA - New England Region protocols.

9. **Chronic Ceriodaphnia dubia Survival and Reproduction Test Duration**

The duration of the chronic Ceriodaphnia dubia survival and reproduction test must not exceed eight days. The minimum acceptability criteria for this test as measured in both the laboratory and the dilution water controls are: (1) 80% or greater survival in the control population; (2) an average of 15 or more young/female in the control population; and (3) at least 60% of the surviving females in the control population shall have produced a third brood. Typically, the third brood is produced by day 7. If this does not happen by the end of **day 8**, it may indicate that the test conditions (i.e., temperature) and/or nutrition (i.e., food) were inadequate or the test organisms themselves were of poor quality. The test is invalid and must be repeated. (Reference EPA/600/4-91/002, July 1994, p. 144.)

10. **Document Ongoing Laboratory Performance**

The reference toxicant data have not always been submitted with the report. As part of an in-house Quality Assurance Program, each laboratory must perform reference toxicant tests on the test organisms it uses and analyze data for the reported test endpoints. Reference toxicant testing must be done monthly in accordance with the EPA Methods Manuals (e.g. EPA/600/4-91/002, Third Edition, July 1994,

Section 4.16.1, p. 16). An updated endpoint-specific, reference toxicity test control chart must be included in every report. Also, if a reference toxicant test was being performed concurrently with an effluent or receiving water test and fails, both tests must be repeated.

11. **Sampling Methods, Holding Times, and Preservation Techniques**

All sampling methods, holding times and preservation techniques must be consistent with 40 CFR Parts 122 and 136. Note that EPA approved test methods require that samples collected for metals analyses be preserved immediately after collection. It has come to EPA's attention that the aliquot for metals testing is sometimes split off and preserved upon arrival at the bioassay laboratory.

12. **Include an Additional Dilution at the Permitted Effluent Concentration**

The minimum number of effluent concentrations to be tested must include an additional dilution at the permitted effluent concentration. This is not always done by the testing laboratory and is extremely important for compliance monitoring.

13. **Acclimate the Test Organisms to the Dilution Water**

Acclimating the test organisms to the dilution water should be done gradually prior to test start. Test organisms are sensitive to abrupt changes in their environment. These abrupt changes can produce a negative and sometimes fatal response to otherwise healthy organisms. In order to provide useable information on possible receiving water effects to test organisms, adherence to test protocols is necessary. Whatever the possible cause of negative response due solely to receiving water characteristics, it is good laboratory practice to follow proper acclimation procedures to eliminate the question of negative response due to abrupt ambient changes. Depending on the severity of the difference between culture water and test dilution water, acclimation using 1:1 dilutions of culture water to dilution water is recommended over a period of several hours until dilution water characteristics are matched.

14. **Dilution Water**

The objective of the WET test is to estimate the toxicity of the effluent in uncontaminated receiving water. Ideally, a grab sample of receiving water must be collected upstream and/or outside of the influence of the outfall for use as dilution water in the tests.

EPA-New England has adopted a species-specific, self-implementing policy for switching to an alternate dilution water during the life of the NPDES permit for WET tests where the receiving water is documented to be toxic or unreliable. The policy authorizes alternate dilution water use in two cases: (1) in any WET test repeated due to site water toxicity. No prior notification to EPA is required for any current test that needs to be repeated due to site water toxicity; and (2) in future WET tests where there are two previously documented incidents of site water toxicity associated with a particular test species. Written notification to EPA is required before switching to alternate dilution water testing for the duration of the life of the permit.

The details of EPA-New England's species-specific, self-implementing policy are provided below.

Case (1): EPA - New England authorizes the use of an alternate dilution water for any WET test repeated due to site water toxicity. This authorization is *species-specific*. If the permittee is required to conduct WET tests using two species, and the receiving water is

toxic or unreliable for only one species, then alternate dilution water use is authorized for that species only.

- (a) The permittee no longer has to *immediately* notify EPA before an invalid WET test is repeated using an alternate dilution water.
- (b) The test must be repeated during the monitoring period specified by the Permit.
- (c) The selected alternate dilution water must have characteristics such as hardness, pH, conductivity, alkalinity, organic carbon, and total suspended solids similar to those of the receiving water, and should not produce a toxic response. Receiving water controls must also be run in alternate dilution water tests.
- (d) A complete WET test report must be submitted by the permittee as required by the Permit. The report must clearly document:
 - (1) that site water toxicity rendered the first test invalid;
 - (2) that a retest was conducted using an alternate dilution water that matched the characteristics of the site water;
 - (3) that site water controls were included in the retest; and
 - (4) whether the site water controls of the retest met the minimum test acceptability criteria.
- (e) If the retest documented that the site water controls met the minimum test acceptability criteria, site water must be used as diluent in future WET tests. If the site water controls of the retest failed to meet test acceptability criteria, an alternate dilution water may be used in future WET tests using that test organism after submitting written notification to EPA. (See Case (2) below.)

Case (2): EPA - New England authorizes the use of an alternate dilution water in future WET tests (for the duration of the life of the permit) after two documented incidents of site water toxicity to a particular test species.

- (a) Before alternate dilution water testing begins, the permittee must submit to EPA written notification of site water toxicity, provide supporting data, describe the alternate dilution water selected, and confirm that the required sets of controls will be run in future WET tests (e.g., site water controls, lab water controls, and adjusted lab water controls). This letter shall be sent to both of the following:

Linda Murphy, Director
Office of Ecosystem Protection (CAA)
U.S. Environmental Protection Agency
One Congress Street, Suite 1100
Boston, MA 02114-2023

Chief
Water Technical Unit (SEW)
U.S. Environmental Protection Agency
One Congress Street, Suite 1100
Boston, MA 02114-2023

- (b) At a minimum, EPA will review alternate dilution water authorizations during permit reissuance.

This guidance is intended to promote compliance and enhance program efficiency and effectiveness. This is not intended to, nor does it, constitute rulemaking by EPA and may not be relied upon to create a right or a benefit, substantive or procedural, enforceable at law or in equity, by any person. EPA reserves the right to revoke this guidance

at any time and may immediately require the Permittee to use site water as diluent as EPA deems necessary. Such a determination will be provided in writing to the permittee.

15. **Chemical/Physical Analyses of Effluent Sample**

The results of the chemical/physical analyses which are to be routinely performed with biomonitoring testing have not always been submitted along with other discharge data required by Part I of the permit. The absence of required data results in an incomplete and unacceptable submission.

16. **Non-Linear Dose-Response Relationship**

As stipulated in EPA - New England protocol, if test results do not exhibit a linear dose-response relationship (i.e., if two tested concentrations cause statistically significant effects, but an intermediate concentration did not cause statistically significant effects when compared to the control), report the lowest effluent concentration where there is no observable effect. In the past permittees have incorrectly reported the higher value. Although the WET test is valid, the results should be used with caution.

17. **Number of Replicates per Concentration**

The test sensitivity is affected by the number of replicates run per concentration. Test sensitivity is defined as the probability of identifying toxic effects of discharges. Sometimes false negatives occur because the toxicity was not statistically detected when comparing the control to the test concentrations.

To increase test power, the laboratory can either reduce test variability or increase the number of replicates. EPA - New England has updated the Pimephales promelas test protocols to require four replicates of each effluent concentration. (Earlier protocols gave a minimum of three replicates as an option.) When the data are analyzed by hypothesis testing, the non-parametric statistical tests cannot be used unless there are at least four replicates at each toxicant concentrations. (Reference EPA/600/4-91/002, Third Edition, July 1994, pp. 49, 53.)

18. **Missing Test Organisms**

Missing organisms have been noted on bench sheets for the Ceriodaphnia dubia survival and reproduction test. This could indicate that there is a lack of familiarity with the laboratory technique and is something that should not happen very often, if at all. If an organism is simply identified as missing, or dead without reason (e.g., due to handling error), it must be treated as a test mortality when performing the statistical analyses of the data or when making a test validity check.

19. **Laboratory Performance/Test Organisms Health**

In some instances, test organism health was questionable at test start, but the test was run anyway. Within 24 hours, the test controls failed to meet the test acceptability criteria, therefore, the test was invalid and had to be repeated. It is important for a laboratory to have a contingency plan for obtaining healthy organisms from another source within 36 hours of sample collection so that the test is not started with organisms of questionable health. The health of test organisms is crucial to test acceptability and permit compliance

monitoring. As evidence of test organism health as well as acceptable laboratory performance during the testing period, the appropriate reference toxicant control chart is to be included by the laboratory as part of the toxicity test report (refer to the test protocols in your NPDES permit).

20. **Site Water Controls in Alternate Dilution Water Tests**

Alternate dilution water WET tests shall be run with a minimum of two controls; a site water control and a toxic free alternate dilution water control. A thiosulfate (third) control must also be run, if necessary. (See item 2. above.) Chemical data of the receiving water and dilution water samples must be included in the report. Some common pitfalls when using an alternate dilution water are: (1) the failure to submit the water chemistry (of both the receiving water and the alternate dilutions water) with the reports; (2) the alternate dilution water characteristics were not similar to those of the receiving water; and (3) a receiving water control was not run (i.e., two controls were not run) in the case of an alternate dilution water test. **One of Two Controls Did Not Meet the Minimum Test Acceptability Criteria**

When two controls were run and one did not meet the minimum WET test acceptability criteria (i.e., the test is invalid), laboratories have not always repeated the tests. The only circumstance where a WET test would not have to be repeated, if one of the two controls did not meet the test acceptability criteria, would be a test where all of the dilutions met the minimum test acceptability criteria. The WET test would be considered as conditionally valid, since one control would have demonstrated that the organisms were healthy and the dilutions demonstrated no effluent toxicity.

21. **Use of Control Data**

The labs sometimes run the statistical analyses comparing the acceptable (lab) control with the dilution series data, and the test data were reported on the DMRs. When performing statistical analyses, the dilution water control is the appropriate one to use for data comparison.

22. **Sign and Certify Each WET Report**

Under 40 C.F.R. §122.41(k), each WET test report submitted to the EPA shall be signed and certified by a person described below or by a duly authorized representative of that person in accordance with 40 C.F.R. §122.22(b) - (d):

- (1) for a corporation, by a responsible corporate officer;
- (2) for a partnership or sole proprietorship, by a general partner or the proprietor, respectively; and
- (3) for a municipality, State, Federal or other public agency, the principal executive officer or ranking elected official.

Although permittees and analytical laboratories must both be familiar with specific NPDES Permit requirements and test protocols, it is the permittee who is ultimately responsible for data quality and integrity that it reports to EPA. When a WET report is signed and certified, it documents that the NPDES permittee is certain that the WET test data submitted are valid, follow applicable protocols and meet the minimum criteria for test results acceptability, and meets the permit requirements for testing and reporting. Please include the following report certification statement of 40 C.F.R. §122.22(d) in every report:

WHOLE EFFLUENT TOXICITY TEST REPORT CERTIFICATION

I certify under penalty of law that this document and all ATTACHMENTS were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Executed on _____
[Date] [Authorized Signature]

[Print or Type Name and Title]

[Print or Type the Permittee's Name]

[Print or Type the NPDES Permit No.]

Since the WET test and report check is complicated, you may wish to have your WET laboratory certify the validity of the WET test data and report accuracy to you. Suggested language is given below. Please note that this does not relieve the permittee from its responsibility to sign and certify the report under 40 C.F.R. §122.41(k).

WHOLE EFFLUENT TOXICITY TEST REPORT CERTIFICATION

I certify under penalty of law that this document and all ATTACHMENTS were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Executed on _____
[Date] [Authorized Signature]

[Print or Type Name and Title]

[Print or Type Name of Bioassay Laboratory]

24. **Telephone Contacts**

If you have questions, please contact Joy Hilton, Water Technical Unit, at (617)918-1877 or David McDonald, Ecosystem Assessment Unit, at (617)918-8609.

ATTACHMENT H

BYPASS OR SEWER OVERFLOW REPORT

DATE OF REPORT: _____ TIME: _____

DATE OF INCIDENT: _____ TIME: _____

NAME OF SYSTEM: _____

FACILITY NAME: _____

NPDES PERMIT No: _____

NAME and TITLE of PERSON REPORTING INCIDENT: _____

TELEPHONE No: _____ ext: _____

LOCATION OF OVERFLOW: _____

RECEIVING WATER: _____

INCIDENT DURATION: FROM (date) _____ TIME: _____

TO: (date) _____ TIME: _____

ESTIMATED TOTAL FLOW: _____

TREATMENT PROVIDED: _____

CAUSE OF INCIDENT: _____

MITIGATION MEASURES TAKEN: _____

ADDITIONAL INFORMATION / COMMENTS: _____

AGENCY / PERSON REPORTED TO: _____

US EPA: _____

STATE: _____